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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/874,587	06/04/2001	Lowell Winger	CISCP249/4147	5663

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EXAMINER	
VO, TUNG T	
ART UNIT	**PAPER NUMBER**
2621	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/13/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	09/874,587	WINGER, LOWELL	
	Examiner	Art Unit	
	Tung Vo	2621	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *03* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03 January 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3,4,6-13,19 and 22-29* is/are pending in the application.

4a) Of the above claim(s) *2,5,14-18,20 and 21* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3,4,6-13,19 and 22-29* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *04 June 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1, 4, 6, 11-12, 19, and 23-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Singh et al. (US 2002/0027954) in view of Jun et al. (US 7,027,509).

Re claims 1, 4, 6, 11-12, 19, 25, and 28, Singh teaches a computer program encoded on a computer readable medium containing instructions for selecting inverse discrete cosine transform (IDCT) algorithms, comprising: a) means (12 of fig. 3) for examining the coefficients of a plurality of DCT blocks corresponding to selected frames within a video scene to determine an End of Block (EOB) length for each of the examined DCT blocks ([0029]-[0034], and 0040]-[0043], Note counting the number of elements per column and row), b) means (12 of fig. 3) examining a distribution of EOB lengths associated with a single selected frame selecting frequent EOB length associated with the video frame ([0043]-[0050]; Note determining the probability of occurrence of blocks having particular patterns of sub-blocks with non-zero DCT coefficients); c) means (14 of fig. 3) selecting each a customized subset of IDCT algorithms (16 of fig. 3, Note choosing and storing an optimal IDCT algorithm for blocks having a pattern of non-zero sub-blocks that have a high probability of occurrence, and choosing a default IDCT algorithm for the remaining blocks based upon the probability) for the entire video picture from

a plurality larger set of IDCT algorithms (16 of fig. 3, Note prob_3 to prob_i) according to the distribution of EOB lengths for the single selected frame, and d) means ([0052]) selecting and executing one of the customized subset of IDCT algorithms for each of the plurality of blocks within the video frame according to the associated EOB lengths of the blocks executing the selected IDCT-algorithm. Moreover, Singh further teaches a system (fig. 3) for reducing inverse discrete cosine transform (IDCT) execution time, said system comprising: a memory for storing a plurality of LDCT algorithm (16 of fig. 3); a computer processor (fig. 3) for examining the coefficients of a plurality of DCT blocks (12 of fig. 3) corresponding to selected frames (B of fig. 3) within a video frame to determine an End of Block (BOB) length for each of the examined DCT blocks ([0039]-[0050]), wherein a video scene is a sequence of frames bounded on each side by a video transition (MPEG-2), examining a distribution of EOB lengths for a single selected frame ([0043]-[0050], [0052]) selecting a customized subset of IDCT algorithms (classes of fig. 3)) for the entire video shot from a larger set of IDCT algorithms according to the distribution of EOB lengths for a single selected frame ([0052]-[0053]), and generating an IDCT algorithm selection signal that identifies one of the IDCT algorithms from the customized subset of the IDCT algorithms to be executed by the processor for each of the plurality of blocks within the video shot according to the associated EOB lengths of the blocks([0056]); and a switch (14 of fig. 3) connected to the processor and the memory (16 of fig. 3) that receives the select on signal from the processor and, in response, selects the identified iDCT algorithm for execution by the processor on the associated block; wherein said switch accepts as input: a block of DCT coefficients ([0031]), an End of Block address ([0040]); and picture type bit rate ([0031])

It is noted that Singh does not particularly teach the computer processor for examining the coefficients of a plurality of DCT blocks corresponding to selected frames within a video shot, wherein a video shot is a sequence of frames bounded on each side by a video transition, wherein the video transition from the group comprising a cut frame, a dissolve, or a cross-dissolve as claimed.

However, Jun et al discloses a hierarchical hybrid shot change detection method for MPEG compressed video as shown in Figures 2 and 6, and teaches the conventional video transitions involving shots that include the editing effects such as fades and dissolves within MPEG video data which includes B-frames of video and DCT block processing, and wherein the video shot is a sequence of frames bounded on each side by a video transition (Note a shot change detection method using a macro block distribution characteristic in accordance with the present invention comprises decoding B frames in a shot change candidate region at a macro block level for a sequence of the B frames sharing adjacent two anchor frames determining a distribution characteristic of an intra coded block and a reference pattern type of the each B frame in the candidate region, and detecting a hard cut by using the distribution characteristic of the intra coded macro block and reference type of macro blocks).

Therefore, taking the combined teaching of Singh and Jun as a whole, it would have been obvious to one skill in the art to incorporate the teachings of Jun into the computer program, method and system of Singh in order to improve the processing speed in the shot change point detection by the color histogram.

Re claims 23-24, 26-27, and 29, Singh further teaches selecting frames are B frames sections (Note Singh et al teaches a method and device for gathering block statistics during

inverse quantization and Iscan as shown in Figures 1-3, and teaches the conventional use of histograms for the determination and selection of the most optimal IDCT algorithm of MPEG blocks of decoded data, which includes B-frames (see sections [0007], [0008], [0011]); wherein the means for examining the distribution of EOB length includes means for generating a histogram of EOB lengths for the examined DCT blocks representing a relative frequency of occurrence of EOB lengths for the single selected frame ([0057]-[0089], see fig. 4), and repeating (a)-(d) for a next shot until a current video shot is a last shot (fig. 3, [0056]; Note figure 3 shows the block classification system in accordance with the invention with run-time updating of the cache memory with the algorithms that are most likely to be executed based on the incoming data stream).

3. Claims 3, 13, and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Singh et al. (US 2002/0027954) in view of Jun et al. (US 7,027,509) as applied to claims 1, 4, and 11, and further in view of Murata et al of record (Fast 2D IDCT Implementation with Multimedia instructions for a Software MPEG2 Decoder).

Re claims 3, 13, and 22, the combination of Singh and Jun does not particularly teach wherein said plurality of larger set of iDCT algorithm includes an iDCT_Normal algorithm, an IDCT_AC algorithm, an iDCT_high algorithm, an iDCT low algorithm and an iDCT DC algorithm as claimed.

However, Murata teaches plurality of larger set of iDCT algorithm includes an iDCT_Normal algorithm, an IDCT_AC algorithm, an iDCT_high algorithm, an iDCT low algorithm and an iDCT DC algorithm (2.2 and 3.1).

Therefore, taking the teachings of Singh, Jun, and Murata as a whole, it would have been obviously to one of ordinary skill in the art to incorporate the teachings IDCT algorithms of Murata (2.2 and 3.1 of pages 3106-3107) into the combined computer program, method, and system of Singh and Jun in order to lessen the computational complexity and improve the efficiency of the MPEG decoding algorithm by gathering block statistics which can be used by the IDCT stage to reduce the number of computations during IDCT.

4. Claims 7-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Singh et al. (US 2002/0027954) in view of Jun et al. (US 7,027,509) and Murata et al of record (Fast 2D IDCT Implementation with Multimedia instructions for a Software MPEG2 Decoder) as applied to claims 1, 3, 4, 22, and further in view of Youn et al of record (6,650,707).

Re claims 8-10, the combination of Singh et al, Jun et al., and Murata et al discloses substantially the same method for selecting inverse discrete cosine transform algorithms, system for reducing IDCT execution time, and computer program encoded on a computer readable medium containing instructions for selecting and executing inverse discrete cosine algorithms as above, but does not particularly disclose though wherein the iDCT low algorithm is based upon an EOB length of 14 or 25 as claimed in claims 8-10.

However, Youn et al teaches in Figure 5 five different IDCT algorithms with specific criteria in determining and selecting one of the five IDCT algorithms Block 520 of Figure 5 of Youn et al teaches selecting an IDCT algorithm based on EOB > 10. In view of the plural breakdown of iDCT algorithms as shown in Figure 5 of Youn et al, it is hence considered

obvious to modify the iDCT algorithm when EOB > 10 to include any desired amount of separate iDCT algorithms, such as the iDCT low algorithms as claimed.

Therefore, taking the teachings of Singh, Jun, Murata as together as a whole, it would have been obvious to one of ordinary skill in the art, having the Murata et al, Jun et al, Singh et al, and Youn et al references in front of him/her and the general knowledge of the selection of iDCT algorithms based on the EOB coefficients, would have had no difficulty in providing the iDCT low algorithm being based upon an EOB length of 14 or 25, and 39 or 50, within the normal iDCT processing of the combined method, computer program, and system of Singh, Jun and Murata in view of the plural breakdown of iDCT algorithms within Youn et al for the same well known iDCT computational efficiency based upon the use of multiple breakdown of EOB lengths purposes as claimed.

Conclusion

5. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tung Vo whose telephone number is 571-272-7340. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mehrdad Dastouri can be reached on 571-272-7418. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Tung Vo
Primary Examiner
Art Unit 2621